sierra monitor corporation

Toxic Gas Sensor Module
2-Wire
Model 4501-XX

The Model 4501-XX Series Toxic Gas 2-wire gas sensor modules allow easy direct connection to many DCS, PLC and other control devices. The sensor module, in a stainless steel enclosure, is best in class for ease of installation, reliable operation and ease of use.

The 4501-XX Gas Sensor Module utilizes the electrochemical cell to monitor for the specified gas over various gas specific ranges. This compact Module requires minimal maintenance. Internal continuous self-diagnostics will automatically indicate any fault problems. The 4501-XX is best in class providing all the built-in features desired by instrumentation and safety professionals, including:

- Industry's longest calibration interval of 180 days
- 2-wire loop powered for easy installation and direct interface to common PLC and DCS
- Integral scrolling LCD 2-line, 16 character display
- Non-intrusive one-person calibration
- 316 Stainless Steel or aluminum enclosure
- 4-20 mA output
- Long sensor life
- Robust RFI immunity
- Ability to rotate face plate to enable the enclosure to be mounted in any orientation.

4501-04	Carbon Monoxide, CO
4501-05	Hydrogen Sulfide, H_2S
4501-06	Chlorine, Cl_2
4501-08	Chlorine Dioxide, ClO_2
4501-25	Ammonia, NH_3

Model 4501 Series Sensors

How It Works

Electrochemical sensors are fuel cell-like devices consisting of an anode, cathode, and electrolyte. The components of the cell are selected so a subject gas, allowed to diffuse into the cell, will cause a chemical reaction and generate a current. The cells are diffusion limited so the rate the gas enters the cell is solely dependent on the gas concentration. The current generated is proportional to the rate of consumption of the subject gas in the cell.

Sierra Monitor electrochemical sensors provide improved reliability by allowing the gas to diffuse into the sensor through a capillary port, rather than diffusing through membranes. The result is an extremely stable sensor with very low temperature and pressure coefficients and the capability to monitor gas as ppm (toxics).

FM APPROVED

Explosion proof all models
FM Performance Approval for 4501-05

Sierra Monitor Corp. 1991 Tarob Court Milpitas, CA 95035 USA (408) 262-6611 (800) 727-4377 Fax: (408) 262-9042
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2-Wire Toxic Gas Sensor Module Model 4501-XX

Specifications:

Performance	4501-04	4501-05	4501-06	4501-08	4501-25
Max. Range (1)	0-1200 PPM	0-100 PPM	0-10 PPM	0-3 PPM	0-100 PPM
Resolution	0.5 PPM	0.1 PPM	0.1 PPM	0.1 PPM	1.0 PPM
Response Time (2)	<25 sec.	<30 sec.	<60 sec	<60 sec	<30 sec
Sensor Life	2 years	2 years	2 years	2 years	(3)

(1) Other ranges available
(2) To 90% range
(3) Ammonia sensor requires electrolyte recharge up to 1 year

Output:

Display:	Scrolling LCD, 2-line, 16-characters
Signal Output:	2-wire sensor powered analog 4-20 mA (Trouble: 3.6 mA)
Loop Resistance	800 ohm

Electrical Data:

Power consumption:	<160 milliwatts
Connection type:	2-wire, loop-powered
Input voltage:	24 VDC nominal: 14-30VDC
RFI/EMI Protection:	EN50081-2, EN50082-2

Operating Range:

Ambient Temp Range:

Standard:	See Table below
Extended Temp	Sensor and 4-20 mA will continue to operate to -40^{o}F (-40^{o}C) but the LCD display will decay over time if exposed to temperatures below -4^{o} (-20^{o} C) for significant time (not for 4501-25)
Storage Temp:	-4^{o} to 122 ^{o}F(-20^{o} to 50^{o}C)

Construction:

Dimensions:	7.0 x 3.6 x 4.0 inches (H x W x D) (17.8 x 9.1 x 11.2 cm)
4501-25	12,6 x 3,6 x 4.0 inches
Weight:	4.4 lb. (2.0 Kg)
4501-25	5.0 lb. (2.3 Kg)
Enclosure:	Stainless Steel, NEMA 4X
Remote Sensor Option:	4501-04 Max 25 feet 4501-05 Max 25 feet 4501-06 Max 15 feet

Approvals and Warranty:

FM Approval:	Explosion proof, Enclosure Class 1, Div. I, Groups B, C, D Class 2, Groups B, C, D Class 1, Zone 1, Group IIB+H2 IP66
4501-05 Approval FM	Performance Approval Standards: 4501-05 Approval FM ISA-92.0.01, Part I-1998 and FM 3600
Limited warranty:	2 years

Specifications subject to change without notice

	4501-04 CO	4501-05 Hl_2S	4501-06 Cl_2	4501-08 ClO_2	4501-25 NH_3
Ambient Temp (^{o}F)	-4 to 122 ^{o}F	-40 to 122 ^{o}F	-4 to 122 ^{o}F	-4 to 122 ^{o}F	-14 to 113 ^{o}F
Ambient Temp (^{o}C)	-20 to 50 ^{o}C	-40 to 50 ^{o}C	-20 to 50 ^{o}C	-20 to -50 ^{o}C	-10 to 45 ^{o}C
Relative Humidity	5 – 99%	5 – 99%	5 – 99%	5-95%	20-95%

Ordering Information

4501-04-AL Sensor Module, 2-Wire, Carbon Monoxide, CO, Aluminum Enclosure
4501-04-SS Sensor Module, 2-Wire, Carbon Monoxide, CO, 316 SS Enclosure
4501-05-AL Sensor Module, 2-Wire, Hydrogen Sulfide, H_2S, Aluminum Enclosure
4501-05-SS Sensor Module, 2-Wire, Hydrogen Sulfide, H_2S, 316 SS Enclosure
4501-06-AL Sensor Module, 2-Wire, Chlorine, Cl_2, Aluminum Enclosure
4501-06-SS Sensor Module, 2-Wire, Chlorine, Cl_2, 316 SS Enclosure
4501-25-AL Sensor Module, 2-wire, Ammonia, NH3, Aluminum Enclosure
4501-25-SS Sensor Module, 2-wire, Ammonia, NH3, SS Enclosure
4501-51 Remote sensor assembly, 4501 Series

Calibration Accessories

5358-01 Calibration Adapter, Standard
5360-00 Calibration Gas Delivery Fitting
5358-51 Calibration/Configuration Magnetic Tool, 4501-XX

Remote Sensor Distances

4501-01 25 feet
4501-05 25 feet
4501-06 15 feet
4501-08 15 feet
4501-25 15 feet

High Capacity Calibration Accessories

1250-01 Gas Sensor Calibration Kit, Type A (CO and H2S)
1250-03 Gas Sensor Calibration Kit, Type C (Chlorine)
1260-04 Gas Cylinder, Carbon Monoxide, 100 ppm, Type A
1260-05 Gas Cylinder, H_2S in N_2, 25 ppm Type A
1260-06 Gas Cylinder, Chlorine, 5 ppm, Type C
1260-13 Gas Cylinder, Carbon Monoxide, 1000 ppm, Type A
1260-45 Gas Cylinder, H_2S in N_2, 10 ppm, Type A
9210-00 Calibrator, Permeation tube
9211-09 Permeation Tube, Ammonia, NH3

REGISTERED ISO 9001 QUALITY SYSTEM

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